course introduction

CS 585, Fall 2019
Introduction to Natural Language Processing
http://people.cs.umass.edu/~miyyer/cs585/

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natural language processing
natural language processing

languages that evolved naturally through human use
e.g., Spanish, English, Arabic, Hindi, etc.

NOT: controlled languages (e.g., Klingon)
NOT: programming languages
natural language processing

supervised learning: map text to $X$
unsupervised learning: learn $X$ from text
generate text from $X$
how?

- Math! Algorithms!
- Data!
- Code!
  - Skill: translating from math to code
  - Skill: debugging math/linguistic/algorithm code
- A little bit of linguistics goes a long way
who?

TAs:
  Tu Vu
  Shufan Wang
  Simeng Sun
  Varun Sharma

e-mail all of us (including me!) at
  cs585nlp@gmail.com

course website:
  https://people.cs.umass.edu/~miyyer/cs585
waitlist override pass/fail etc.

- don’t email us about getting into the class because we can’t help… please contact Darlene Fahey at fahey@cs.umass.edu with such questions or requests
- anyone can sit in the class!
- for MS students: the pass/fail deadline will be Oct. 29, the same as it is for undergrads
office hours every day of the week!

Monday w/ Shufan: 11:30am-12:30pm in CS207 Cube 3  
Tuesday w/ Mohit: 4-5PM in CS258  
Wednesday w/ Varun: 12-1PM in CS207 Cube 4  
Thursday w/ Simeng: 11am-12pm in CS207 Cube 4  
Friday w/ Tu: 3-4PM in CS207 Cube 4

If necessary, TA office hours will be extended by one hour during homework / exam weeks
anonymous questions / comments?

- submit questions/concerns/feedback to https://forms.gle/j9ECQXX9pJFb4zvg7

- we will go over some/all submitted responses at the start of every class
Prerequisites

• Comfort with programming, algorithmic thinking
  • Ever debugged a graph algorithm? Know its Big-O time and space requirements?
  • CS 220 or 230

• Comfort with probability and mathematical notation
  • Ever used Bayes Rule?
  • CS 240

• Excitement about language!
• Willingness to learn
Requirements

• (10%) Participation and short exercises
  • Bring pencils/pens/paper to class

• (30%) Problem sets
  • Written: math and concepts
  • Programs: in Python
  • All HWs will be on Google Colab other than HW0

• (25%) Midterm (in class, end of October)

• (35%) Final projects (groups of 5)
  • Choose a topic, or select a suggested topic
  • Project proposal
  • Progress report
  • Final report / presentation
Logistics

• Main course website: http://people.cs.umass.edu/~miyyer/cs585/
• Gradescope for homework submissions
• Moodle for lecture video recordings
• 585-01 and 585-02 sections are the same
• Due next Thursday: HW0
Readings

• No need to buy any textbooks!
• Readings will be provided as PDFs on website
  • Often draft chapters from Jurafsky and Martin, *Speech and Language Processing*, or Jacob Eisenstein’s *Natural Language Processing*, or random research papers / notes :)
Levels of linguistic structure

Discourse

Semantics

Syntax: Constituents

Syntax: Part of Speech

Words

Morphology

Characters

CommunicationEvent(e)  SpeakerContext(s)
Agent(e, Alice)  TemporalBefore(e, s)
Recipient(e, Bob)

Syntax:

Part of Speech

Morphology

talked [VerbPast]

Alice talked to Bob.

Alice talked to Bob.
demos!
(alenlnlp.org)
demos!

(https://talktotransformer.com/)
python demo!
(colab.research.google.com)
• Check out HW0 on the website
• See you on Thursday